Water Quality

S.C.Delaney/U.S.EPA

Each day, Americans enjoy the benefits of clean water. Whether it's a day at the beach, an ice-cold glass of water or a plate of fresh shellfish, this valuable resource sustains our lives and enriches our nation. We rely on water for drinking, food production and recreation. It is also essential for manufacturing, transportation and power generation. Twenty-five years ago, however, our nation's water resources were in serious jeopardy. Threatened by industrial pollution and inadequate sewage treatment, our rivers, lakes and harbors were overwhelmed by the uncontrolled waste of a growing nation.

To combat this degradation, the nation embarked on a long journey to restore the integrity of our waters and make them fishable and swimmable once again. In doing so, the American public committed substantial financial resources to clean and protect the 3.5 million miles of rivers, 41 million acres of lakes, 277 million acres of wetlands and 34,400 square miles of estuaries that make up the nation's vast water network. A quarter century later, our efforts have produced real environmental improvements. In communities across the nation, surface and drinking-water resources are now safer, cleaner and better protected.

Shad Return to the Delaware

CLEANER, HEALTHIER WATER

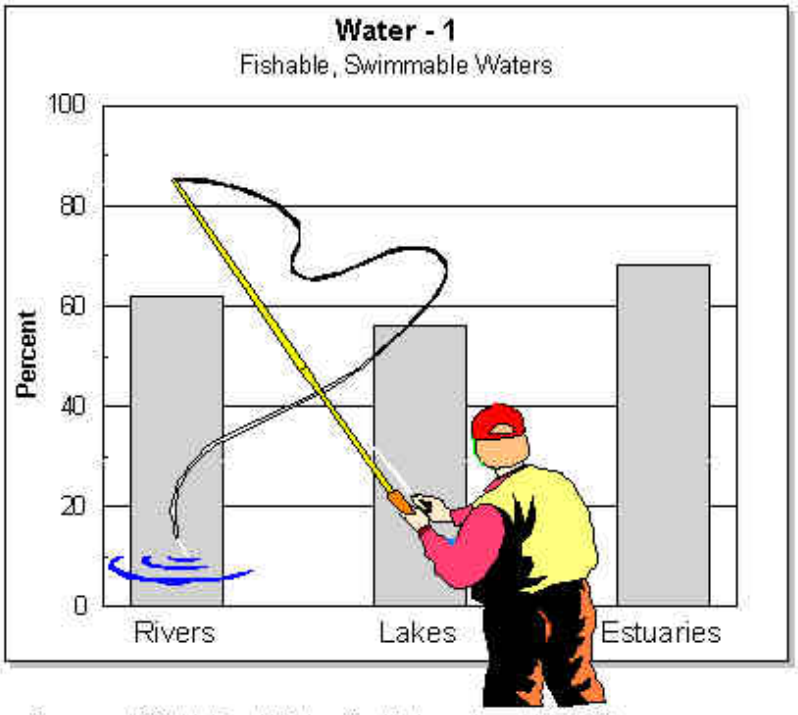
The cleaner water we enjoy today is the result of a long-running restoration process that began in 1972 with the passage of the Clean Water Act (CWA). Before the CWA, many portions of our national waters were highly polluted, as thousands of factories, cities and towns dumped industrial wastes and sewage into near-by waters. As the nation's population and industrial base grew, these practices often inflicted serious environmental harm.

S.C.Delaney/U.S.EPA

Community Clips *The Cleanup of Boston Harbor*

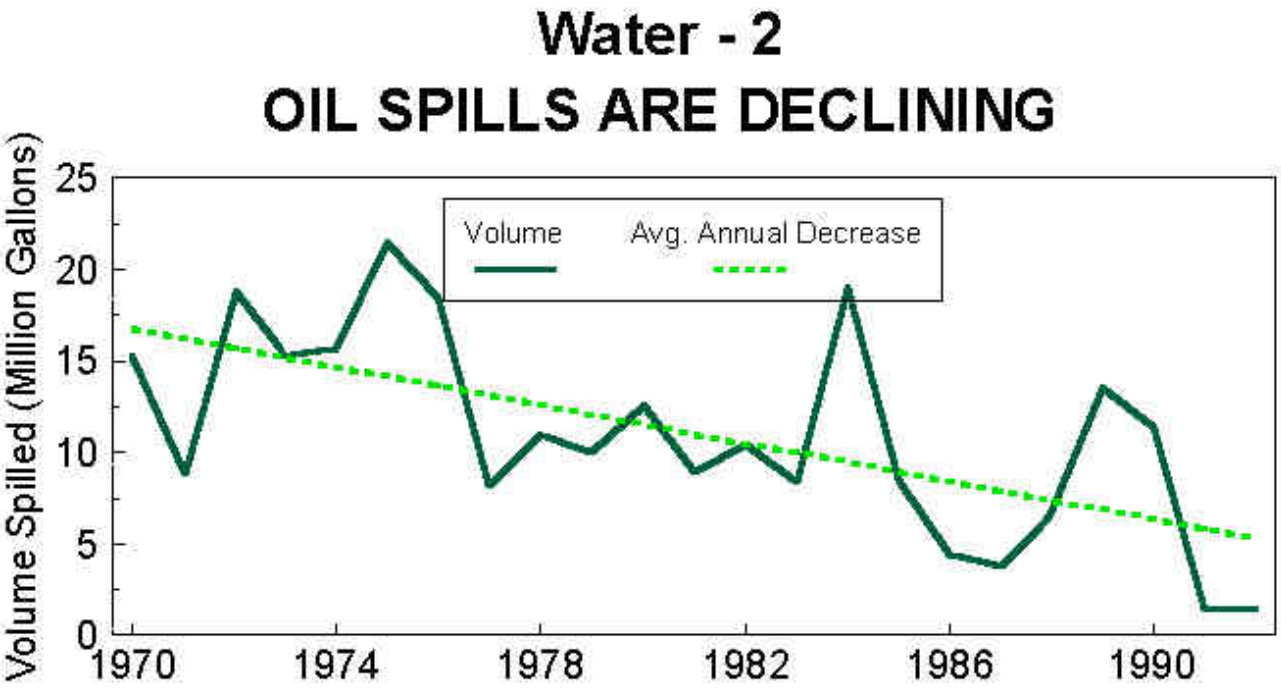
Today, our water is cleaner and healthier than at any point in the last quarter century. Fish have returned to waters that were uninhabitable for decades, communities are investing in waterfront revitalization projects and people are building homes and raising families near waters that were once too polluted for safe contact.

In 1974, the EPA conducted general surveys of the nation's largest rivers, and found that only about 40% were safe enough for fishing and swimming. Today, about 60% of the Nation's surveyed rivers, lakes and estuaries are clean enough to meet basic uses such as fishing or swimming. (See Water-1).



Source: 1994 National Water Quality Inventory, U.S. EPA.

Our waters are cleaner because action has been taken to ensure protection against senseless pollution and unnecessary destruction. Ocean disposal of sewage sludge, industrial waste, plastic debris and medical waste has been banned. Environmental safeguards have been put in place to guard against oil spills (see Water-2). Wetlands and other aquatic habitat are being better protected as recognition about their vital functions and values increase. Perhaps our biggest gains are attributable to better control of the most obvious sources of water pollution -- wastewater discharges from industry and municipal sewage treatment plants.



Source: Department of Transportation/U.S. Coast Guard, "Pollution Incidents in and Around U.S. Waters, 1986" and unpublished data.

Reduced Industrial Pollution

Prior to 1970, wastewater discharges from industry went largely unchecked. The CWA, however, made it illegal for any industry to discharge pollutants directly to national waters without a permit specifying appropriate pollution limits. The EPA developed standards for more than 50 different industries and currently oversees more than 57,000 industrial water pollution permits. Currently, these permits prevent over one billion pounds of toxic pollution from entering our nation's waters each year.

Community Clips ***Mississippi River Quality***

A related water pollution control program focuses on companies that dump liquid wastes down their drains into the public sewer system. The CWA contains special provisions that require these dischargers to "pretreat" their waste before it enters the sewer. Currently, more than 30,000 major industrial dischargers are covered by pretreatment standards. As one of EPA's most successful programs, pretreatment standards have reduced toxic discharges to public sewers by an estimated 75 percent.

Better Sewage Treatment

In the past, raw or inadequately treated sewage was routinely released into our nation's waters. As sewage decomposed, these wastes consumed large amounts of oxygen from the water. Over time, continuing releases of sewage consumed so much oxygen that many waterbodies could no longer sustain aquatic life.

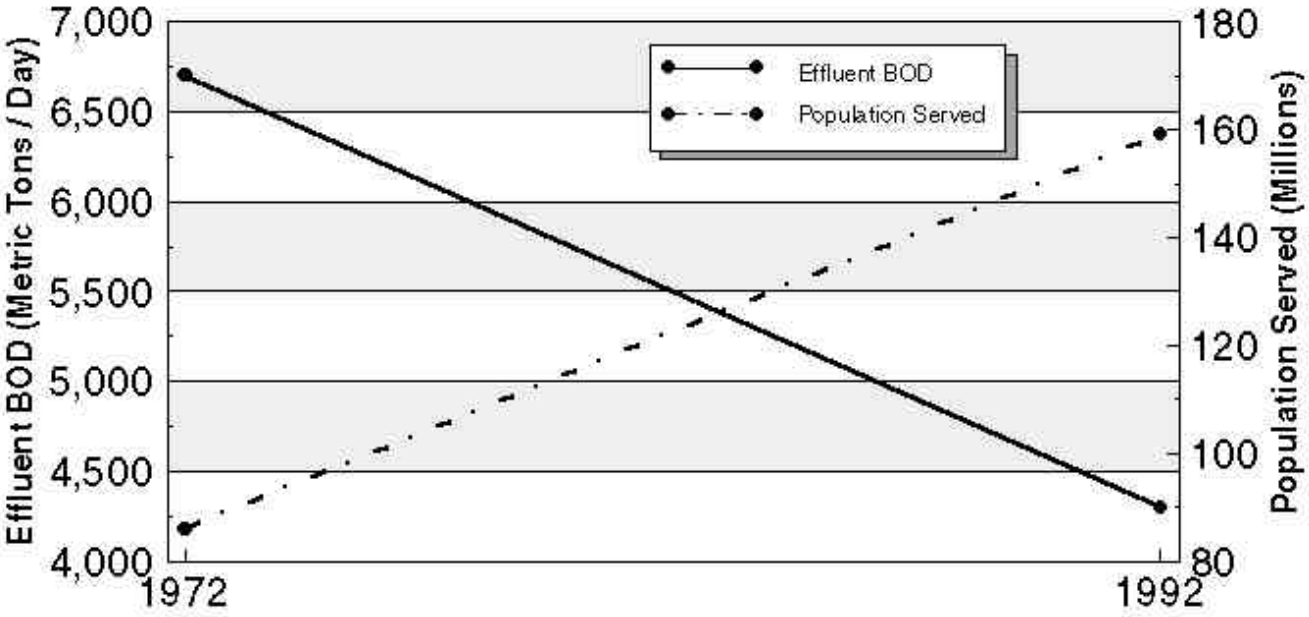
Community Clips ***Toxics Management in the Niagara River***

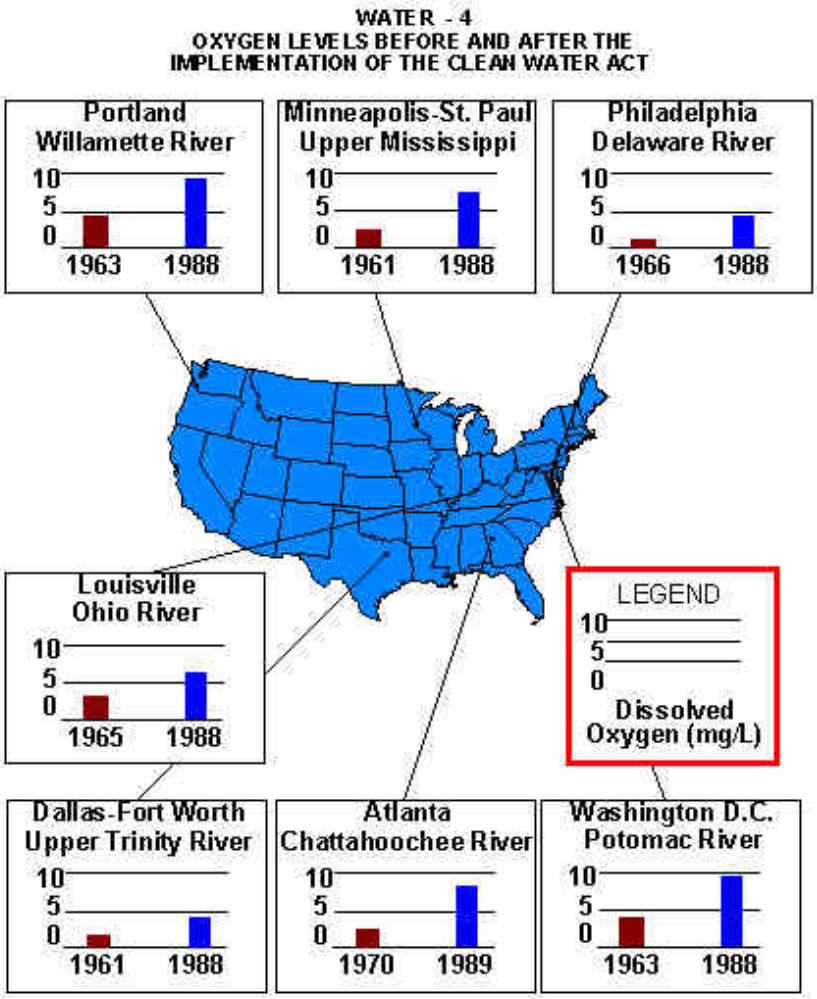
To reverse this degradation, EPA developed a major sewage treatment program designed to eliminate the harmful effects of human wastes on aquatic ecosystems. In addition to providing major funding for the construction of new wastewater treatment plants, EPA implemented important new standards requiring wastewater plants to treat and remove oxygen consuming wastes.

Seventy-three million more people, in thousands of communities across the nation, have upgraded sewage treatment, compared to 25 years ago. The water quality improvements associated with these efforts are impressive. Releases of oxygen consuming wastes have declined by 36 percent (from 6,700 metric tons a day in 1970 to 4,300 metric tons a day in 1992) even though the amount of sewage being treated has increased by 28 percent (see Water-3). Even more importantly, levels of life-giving dissolved oxygen have increased in regularly monitored waters across the country (see Water-4).

Water - 3

Environmental Results: Increasing Secondary and Advanced Sewage Treatment -- Decreasing Biological Oxygen Demand (BOD)





Safer Drinking Water

Most people in the United States simply turn on the kitchen tap to pour a clean, safe glass of drinking water. It's probably even fair to say that most Americans assume that the 34 billion gallons of tap water we use each day will always be pure and close at hand. To ensure that this would always be true, Congress enacted the Safe Drinking Water Act in 1974.

Since that time, preserving the safety of our nation's public drinking water supply has been, and continues to be, one of the EPA's top priorities. In fact, over the last 20 years EPA has issued numerous drinking water standards to protect the public from the effects of harmful chemicals and microbial pollutants. In addition, the EPA and states monitor the quality of drinking water supplies and develop strategies to prevent contamination of our drinking water reserves. Together these efforts constitute a comprehensive program that provides the American public with a safe and reliable water supply.

Currently, the U.S. has about 7,000 community water systems that provide drinking water for over 240 million people. About one out of five of these systems uses surface waters, such as lakes or rivers, for their water source. These surface water systems serve almost two-thirds of the population. The remainder of the population is served by a system that pumps its water from the ground."

The EPA has developed safety standards for 84 specific pollutants and established programs that ensure that the nation's public water supplies remains safe for human consumption. Systems that draw their water from surface waters, for example, must meet filtration and disinfection standards to remove bacteria and parasites. The EPA estimates that these requirements have helped prevent 200,000 to 470,000 cases of gastrointestinal illnesses each year.

The EPA is also working with the states and other stakeholders to develop long-term protection programs to ensure that drinking water sources do not become contaminated in the first place. Special protection programs have been put into place in about 4,000 communities across the country.

CHALLENGES AHEAD

The EPA's 25th anniversary provides a timely opportunity to reflect on the progress the nation has made in restoring and protecting our aquatic resources. It is also an opportune time to look to the future and take stock of the continuing challenges that lay ahead.

Protecting the San Francisco Bay

Three of these challenges -- wetland protection, nonpoint source pollution, and the threat of micro-organisms in our drinking water supplies--will take center stage. The EPA hopes new programs that emphasize education, coordination, and innovation will provide timely and effective solutions for these difficult problems.

Wetland Protection: In their natural state, wetlands help regulate and maintain the health of rivers, lakes, streams and estuaries. They provide ground remove space water recharge, filter out pollutants, and reduce flooding and erosion. Wetlands are important habitats for fish and wildlife, including large numbers of migratory birds and a number of threatened or endangered species. Each year, wetlands-dependent enterprises, such as commercial fishing, recreation and timber management, contribute billions of dollars to the U.S. economy.

Before the substantial benefits of wetlands protection were recognized, about 100 million acres of wetlands were lost over the last two centuries, more than half of the wetlands in the continental United States. Through private and public wetland acquisition efforts and state and federal environmental programs, the rate of wetland loss has been reduced from 460,000 acres per year several decades ago to between 70,000-90,000 acres per year now. Although this progress is encouraging, meeting the interim national goal of "no overall net loss of wetlands" will require maintaining existing protections while increasing education, incentive programs for restoration and protection and voluntary land stewardship efforts.

The National Biological Survey, under the Department of Interior, recently identified 51 types of wetland systems as threatened or endangered. Protecting these remaining systems is one of EPA's most important goals. To this end, the EPA and other agencies have reformed federal wetlands programs to focus on common sense solutions, and hope to achieve the no net loss goal by the year 2005. In addition, the EPA is working with States to protect the wetlands that remain from harmful pollutants, hydrological disturbance and invasive biological species, and to restore wetlands so that the long-term goal of "increasing the quality and quantity of America's wetlands" can be achieved.

Preserving and Restoring Louisiana Wetlands

Harbor Herons Wildlife Refuge

Alligators Rebound in the Southeastern U.S.

Nonpoint Sources of Pollution: Nonpoint source pollution is now the leading cause of water pollution in this country. Unlike discharges from industrial and municipal facilities, often referred to as point source discharges, nonpoint sources are more difficult to identify and control. Typical sources of nonpoint pollution include drainage from our streets and parking lots, runoff from agricultural land and deposition of pollutants from the air.

Nonpoint pollution is a serious environmental threat that damages our aquatic ecosystems in three ways.

- **Chemical contamination.** Pesticides, trace metal and used oil are regularly detected in agricultural and urban runoff. Even in very low concentrations, these compounds can contaminate the aquatic habitat, poisoning wildlife populations in and around the waterbody, including the fish we eat.

- **Biological constituents.** Nonpoint source pollution contributes vast amounts of nutrients from fertilizers and animal wastes to our nation's waters. These contaminants produce unsightly algae blooms and reduce oxygen in receiving waters. If these conditions persist, the waterbody's oxygen supply can become so scarce that fish and other aquatic organisms can no longer survive.

- **Physical degradation.** Nonpoint runoff frequently contains large amounts of sediment and silt. When deposited in the waterbody, these sediments reduce the clarity and visual appeal of lakes and rivers and increase the cost of drinking water treatment. Sediment and silt are also major causes of aquatic habitat degradation because they eliminate the sunlight needed by plants growing below the water's surface and can inhibit the spawning of valuable fish like salmon. Habitat destruction, both on stream banks and within streams, also reduces survival chances for aquatic life.

Beginning in 1987, the EPA initiated a major program to assess the nation's nonpoint problem. The initiative seeks to identify geographic areas with high-risk nonpoint source problems and to develop plans to protect waters of ecological significance. As of 1994, the EPA had approved 51 state nonpoint source management plans, most focusing on pollution prevention and interagency coordination.

Similarly, in 1989, the EPA developed the Nonpoint Source Agenda for the Future. This Agenda seeks to build on current programs by developing practical solutions to the nonpoint source pollution problem. In particular, education and financial incentives are being targeted as alternatives to traditional regulatory controls. With the help of states, tribes, local governments, community groups and the private sector, the EPA hopes to reduce the nonpoint source pollution problem and make more water swimmable, fishable and drinkable in the near future.

The Challenge of the Chesapeake

Drinking Water: If undetected micro-organisms or chemical contaminants make their way into a public water system, thousands of people can become ill. Because of the serious consequences of even one lapse, the EPA strives to ensure that all Americans receive safe drinking water at all times.

Drinking Water Protection in New York and Puerto Rico

To fulfill this goal, the EPA requires public water systems to meet rigorous safety standards. Despite these efforts, there

have been localized cases where water has been rendered unsafe to drink. In 1993, for example, a waterborne parasite called cryptosporidium was linked to over 400,000 illnesses and 100 deaths in Milwaukee. As the worst waterborne disease outbreak in decades, this incident highlights the potential vulnerability of all drinking water systems.

While our water supplies are generally considered safe, the EPA is committed to addressing the threats to our drinking water. As part of this commitment, the EPA continues to develop new standards based on the highest priority health risks. In addition, the EPA will provide technical assistance to smaller communities that may not have the expertise to fully manage their drinking water systems. Other programs will support the design and use of methods that reduce the cost and improve the reliability of drinking water treatment. Finally, the EPA will continue to emphasize protection of water sources throughout the nation so that our drinking water supplies remain free of harmful contamination.

Watershed Protection: To address these and other challenges, the EPA is placing an increased emphasis on watershed or community-based environmental protection. Rather than focusing on single pollution sources or problems, a watershed approach provides for a more comprehensive, holistic view that takes into account multiple conditions, stressors and problems in need of attention. When fully developed and implemented, a watershed approach might address protection for drinking water sources and wetlands areas, air deposition of toxic chemicals, polluted runoff from urban areas, as well as the more traditional industrial and municipal wastewater discharges.

A watershed approach also focuses on achieving better coordination among various government and nongovernment agencies that have watershed management responsibilities and increasing participation by the many stakeholders that have an interest in their watershed's conditions. Whether the issue is defining priorities, scheduling cleanup actions, or restoring critical wetland areas, much more can be accomplished when multiple stakeholders unite to leverage their resources, time and attention for the benefit of the watershed and community as a whole.

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